2007-05892/

Fall 1999, Vol. 24, No. 3 ISSN 1188-066X

Natural Sciences and Engineering Research Council of Canada

NSERC Contact

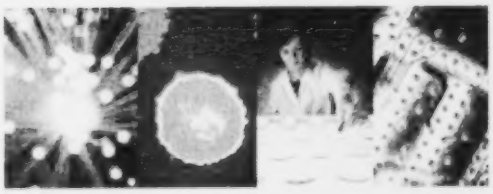
Investing in people, discovery and innovation

3 **NSERC and CIHR**

4 **University-Industry Synergy Winners**

4 **New Secretary of State**

www.nserc.ca



The World Conference on Science

Editorial by NSERC President Tom Brzustowski

The World Conference on Science took place in Budapest at the end of June, and I attended as part of the Canadian delegation. By now, all comment about the WCS has long ago disappeared from the popular media and even from the pages of *Science* and *Nature*, but the conference has raised some issues that may affect the world research community for some time to come. And I think that it has raised a special issue for Canadian science.

The WCS was not a scientific conference but a conference about science. Judged in that light, it can be considered a success. The conference was organized by UNESCO and ICSU to bring the UN international community together to discuss the principal issues of science in the 21st century. The immediate tangible results of the conference were two documents adopted by consensus on the last day: the "Declaration on Science and the Use of Scientific Knowledge," and the "Science Agenda—Framework for Action" (available at www.unesco.org/opi/science). These documents are not binding, but they could prove influential if they become the subject of serious and widespread discussion in the research and science policy communities of the participating nations.

What follows is a brief summary of my impressions of the WCS:

- Many countries made a point of explicitly expressing strong support for publicly funded basic scientific research, with open publication of results.
- Many countries identified the need to improve their own systems of innovation so that they might use knowledge more effectively for the benefit of their peoples.
- Many countries called for increased international networking in science as a means of enhancing their own capabilities in research. Both North-South and South-South collaboration were identified as essential.
- Public support for science is slipping in many countries. One reason for this may be a poor image

(continued on page 2)

NSERC
CRSNG
Ottawa, Canada
K1A 1H5

Canada Post Postage Paid / Postes Canada Port payé
Bulk third class / En nombre troisième classe
1173
OTTAWA, ONT.

Canada

Contact is published by the:

Communications Division
NSERC
350 Albert Street
Ottawa, Ontario
K1A 1H5
Tel.: (613) 995-5992
Fax: (613) 943-0742

It is also published on the Internet at www.nserc.ca/publicat.htm.

Forward address changes to the mailing address above or send an e-mail to comm@nserc.ca.

Editor-in-Chief
Joyce French
E-mail: joyce.french@nserc.ca

NSERC is Canada's instrument for promoting and supporting university research in the natural sciences and engineering, other than the health sciences.

NSERC supports both basic university research through research grants and project research through partnerships of universities with industry, as well as the advanced training of highly qualified people in both areas.

Continued from cover page

of science conveyed by the media; another may be inadequate science education of the general public. However, there was broad agreement that public support for science will increasingly depend on the extent and quality of public involvement in decisions on major issues involving science.

- There seemed to be a general blurring of the distinctions among science, technology and engineering. Several national speakers reminded the conference of these differences, but with little visible effect.
- Just about everyone agreed that ethical considerations would loom large in many forthcoming issues involving science. Those who went further insisted that ethical issues must be treated as central and addressed explicitly by decision-makers. Ethics must neither be treated as an afterthought, nor left to somebody else to look after.
- There was strong agreement on the need for close collaboration between the natural sciences on the one hand, and the social sciences and humanities on the other, as complementary systems of knowledge that have necessary and appropriate contributions to make in human affairs.
- To fulfill its potential for meeting human needs, scientific activity of all kinds must be open to all of society. It was made evident, both in the formal sessions and in informal discussions, that women in particular, but also the handicapped and indigenous peoples, now generally consider themselves excluded from it, and that something must be done to change that situation. (The appearance of the leadership group facing the audience from the platform throughout the conference only reinforced that view.) This is a matter of equity, but not only equity. It is also a matter of society mobilizing all of its human resources to deal with the very difficult issues whose solutions will involve science.
- Many countries stated that there should be recognition and appreciation for traditional knowledge and learning, both as a source of knowledge that is appropriate in some situations that have become important today, and as an historical influence on the development of modern science. This was an emotional issue for some speakers.
- Two general summary themes were frequently sounded: the need for a "new social contract" between science and society, and a "new commitment" of states to science and of science to the service of humanity. Either one may become the retrospective motto of the conference, even though some speakers pointed out that "social contract" already had an established and quite different meaning in Europe.

That last point about a social contract between science and society raises some questions. Who speaks for society in this context? At one time the short answer might have been that it is the state, but today many non-governmental organizations also claim to speak in the public interest.

And who speaks for science? I think that question is particularly difficult for Canadians. Most, if not all, developed countries have a publicly funded national Academy of Science that has an honorific role, but is also recognized as the national voice of science. Some countries also have a separate Academy of Engineering that functions similarly. But who speaks for science and engineering in Canada?

There is no Canadian Academy of Science. The Royal Society of Canada is an established national organization that has been doing important work for many years in recognizing and honouring outstanding Canadian scholars in all fields. On occasion, it has also conducted significant studies commissioned by the government. The Canadian Academy of Engineering is a newer organization playing the corresponding role for the engineering profession. The RSC and the CAE both certainly have the intellectual capacity to represent the

Canadian scientific and engineering communities in national debates, and to develop compelling independent advice to government on major issues that they themselves have identified, but they lack the resources and the public attention to play those roles.

There is no Canadian Association for the Advancement of Science on the model of the influential AAAS in the United States. There is an active French-Canadian association, ACFAS, but it has no counterpart in English-speaking Canada. There are other scientific and engineering organizations, of course, but their mandates are quite specific. The various disciplinary scientific and engineering societies deal with technical issues in their fields. The provincial associations of professional engineers deal with the issues of licensing practitioners and enforcing the legislation that establishes the profession.

Two groupings of such organizations, PAGSE (pronounced "pages"), the Partnership Group for Science and Engineering, and CCR, the Canadian Consortium for Research, are speaking out on behalf of their member organizations on issues such as federal budget priorities for research. At the moment, both organizations are acting in a lobbying role, with PAGSE also involved in sponsoring events to bring recent developments in science and science policy to the attention of parliamentarians, civil servants, and the media.

Valuable and necessary as the activities of all these organizations are, it is fair to say that there is no authoritative national voice of the Canadian science and engineering communites that is comparable with the national academies in other countries.

That situation is not new, but the World Conference on Science suggested to me that, as a result, Canada may be lacking the institutional capacity to deal with the big issues involving science and society (e.g.: technological risk) in a balanced way.

I think we have to ensure that Canada has that capacity, and soon, because the need for it is already here and it can only increase.

NSERC and CIHR

The interim governing council of the Canadian Institutes of Health Research (CIHR) recently announced their transitional funding plans for the coming year. This involves program commitments to be made by MRC, SSHRC and CHSRF (Canadian Health Services Research Foundation) this autumn, and funded out of CIHR next fiscal year. Several NSERC-supported researchers have asked us why NSERC didn't figure in that announcement.

The first point to be made is that the promise of CIHR is tremendous. CIHR's integrated approach to health research across its four areas of activity (basic biomedical, applied clinical, health care systems, and societal and cultural determinants of health) will make it possible to study in an integrated way more of the many factors that affect our health. The new broad vision of health research can be expected to improve health service delivery and lead to better health for Canadians.

But what about NSERC? The simple answer is that the NSERC Act expressly rules out our supporting health sciences in these words: "It is the function of the Council to (a) promote and assist research in the natural sciences and engineering *other than* the health sciences; ..." Nevertheless, of course, NSERC does fund basic research in natural sciences and engineering that may contribute to downstream research in health, among other areas, and we also fund research in areas of technology that may have uses in health sciences and in health care.

This means that CIHR may become a source of additional funding for some individual researchers now receiving NSERC support who are qualified to undertake research that will contribute to the goals of CIHR. We hope that the natural sciences and engineering community will take full advantage of these new possibilities.

We expect that the cooperative arrangements involving MRC and NSERC, such as all the Tri-Council activities and the NCE program, will continue with only a name change from MRC to CIHR. These arrangements have served Canada well for many years and will continue to do so in the future.

Innovators to Confer

An exciting conference celebrating Canadian innovation will take place in Ottawa's Westin Hotel from November 30 to December 2, 1999.

The conference will bring together leading players from different sectors of Canada's innovation system, including universities, hospitals, colleges and other research institutions, as well as industry, governments, the voluntary sector, and the media.

This conference offers a unique opportunity to hear about the latest developments and future directions for Canadian innovation. Day One will focus on the bottom line of innovation—what it takes to create and sustain the alliances that make innovation happen. Day Two will look ahead to see where Canada is going as the new millennium begins.

Come and meet colleagues from all over the country, and help create alliances for the new millennium!

The conference is sponsored by the Canada Foundation for Innovation, NSERC, SSHRC, and MRC.

For more information, visit the conference Web site:
www.innovationcanada.org.

ALLIANCES FOR THE NEW MILLENNIUM
INNOVATION CANADA
ALLIANCES POUR LE NOUVEAU MILLÉNAIRE

And the winners are ...

University - Industry Synergy

Those attending the 1999 Innovation Conference: Platforms for Organizational Growth, October 21 and 22 in Calgary, will have the opportunity to see and hear the winners of the 1999 Synergy Awards. Sponsored by The Conference Board of Canada and NSERC, the awards recognize outstanding examples of university-industry R&D collaboration for commercialization and wealth creation. The winning partnerships are:

Small- and medium-sized companies category

- **University of British Columbia and Universal Dynamics**
  for their successful partnership in the development of BrainWave™, an adaptive controller now in use in many process industries.
- **University of Alberta and Alberta-Pacific Forest Industries Inc.**
  for a pioneering partnership that resulted in the development of a more natural forestry management model.

Large companies category

- **University of Alberta and Syncrude Canada Ltd.**
  for their exemplary collaboration in the development of oil-sands technology.
- **University of Waterloo and Falconbridge Limited**
  for their ten-year collaboration in the development of innovative approaches to treating and preventing acid mine drainage.

Ventures involving several industry partners category

- **The Consortium for Research in Elastic Wave Exploration Seismology—The CREWES Project (consortium of 28 companies and the University of Calgary)**
  for their ten-year collaboration in the development of major advances in subsurface imaging.

Leo Derikx Award

- **Canadian Microelectronics Corporation (consisting of more than 60 companies and academic research institutions)**
  for its successful partnerships in promoting research into microchip technologies and the development of innovative new chips, and in training the next generation of microelectronics researchers.

New Secretary of State

NSERC has a new Secretary of State (Science, Research and Development), Dr. Gilbert Normand.

Dr. Normand received his degree in medicine from Laval University in 1970. He operated a private medical practice in Montmagny from 1970 to 1989 and was a member of the medical, dental and pharmaceutical staff of Hôtel-Dieu de Montmagny hospital from 1970 to 1997. Since 1993, he has served as a consulting physician with the public health directorate of the Chaudière-Appalaches regional health and social services board.

Dr. Normand has also taken an interest in health issues in the Third World and in rural areas of Quebec. He conducted health activities in Jamaica in 1968 and took part in the development of a "healthy cities, towns and villages" network in Senegal in 1993 and in the reorganization of a general hospital and the central pharmacy in Chad in 1994.

Dr. Gilbert Normand

Dr. Normand's political career started in 1985, when he became mayor of Montmagny, a position he held until 1993. From 1988 to 1992 he was the founding president of the CRCD (Conseil régional de concertation et de développement). He was elected MP for the federal riding of Bellechasse-Etchemins-Montmagny-L'Islet on June 2, 1997, and appointed Secretary of State (Agriculture and Agri-Food, Fisheries and Oceans) on June 18, 1997.

As Secretary of State for Agriculture and Agri-Food, he was entrusted with responsibility for numerous issues and activity sectors, among them the development of functional foods and neutraceuticals, the world-wide development potential for which is estimated at over $500 billion by the year 2000.

With respect to Fisheries and Oceans, Dr. Normand was responsible in particular for aquaculture, an extremely promising industry both for Canada and for the rest of the world.

On August 3, 1999, he was appointed Secretary of State (Science, Research and Development) under the Industry Canada portfolio, and has thus been entrusted with an entirely new mandate, just as future-oriented and stimulating as his previous one.

Students give high marks to Shad Valley '99

"What do you want to do after you graduate?" It's a question that all high school students face as they approach their final year. The Shad Valley program is helping students find answers to this sometimes daunting challenge.

The goal of the program, which is operated by Shad International, a non-profit educational organization based in Waterloo, Ontario, is to promote excellence in science and technology and entrepreneurship among top high school students.

Every summer, Shad Valley sends nearly 500 of the brightest 16- to 19-year-olds from across the country and around the world to university campuses throughout Canada. They spend four weeks exploring state-of-the-art developments in science-based subjects that will give them a leg up in their future careers.

This year, nine campuses took part in Shad Valley, including Acadia, Carleton, McMaster and Lakehead universities, and the universities of British Columbia, Calgary, Waterloo, Sherbrooke and New Brunswick.

The "Shads" as they're known in Shad-Valley lingo, participate in seminars and workshops on subjects that can range from robotics and computer-aided manufacturing to radiology and medical engineering.

Anita Dey

Anita Dey of Fort McMurray, Alberta, was one of 52 teens who attended McMaster's Shad Valley this summer. She valued the experience for the exposure it gave her to the medical world, a field she's interested in pursuing. Vajid Khan of Ottawa, another McMaster Shad, appreciated the broad range of subjects covered during the program, which he says will help him make decisions about the courses he takes when he starts university.

Vajid Khan

The majority of students go on to a five-week paid work-term with a Shad Valley partner company, testing their abilities and skills on real-world challenges. Thierry Botter, for example, a 16-year-old from the National Capital Region, spent his work term at the National Research Council in the Femtosecond Science Program.

Thierry Botter

"This project gave me the opportunity to gain hands-on experience and theoretical knowledge on the frontier of femtosecond science research, something I'm very grateful for," says Botter. "It also gave me a chance to see what a physicist really does, because no matter how much knowledge you gain in school, nothing comes closer to the real life of a physicist than such an experience."

In keeping with its commitment to nurture the next generation of scientists and engineers, NSERC has been sponsoring Shad Valley since 1982. Initially, NSERC provided student bursaries, but more recently it has begun leveraging private-sector participation in Shad Valley and providing access to the program for outstanding student candidates from across Canada.

In 1998–99, for example, Shad Valley used NSERC funds for nine student partnerships—primarily to those living in areas where there are few or no other sponsorships available. NSERC also enabled Shad Valley to recruit ten new industry partners by providing a portion of the required industry partnership fee.

These co-partnerships are offered to private-sector organizations that have not, in most cases, previously participated in Shad Valley, or to smaller companies that may not be able to afford the full partnership fees. Industry partners take part in the selection process and provide the five-week paid work-terms to their students.

One year shy of its twentieth anniversary, Shad Valley's tradition of excellence is sure to continue to have a positive impact on Canada's most promising young students.

Letting the numbers tell the story

Since Shad Valley's inception in 1981, participation on all fronts—students, industry partners and universities—has grown by leaps and bounds. The following 1999 Shad Valley figures paint an impressive picture.

931	Total number of applications received by Shad Valley
475	Number of participating students
9	Number of host campuses
28	Number of international participants
214	Number of participating companies and organizations

For more information, contact Shad International at:
Tel.: (519) 884-8844
Fax: (519) 884-8191
E-mail: info@shad.ca
Web site: www.shad.ca

Plant biology research restores meaning to "salt of the earth"

"Salt of the earth" used to be a good thing. But with saline soils reducing agricultural yields around the world, that saying no longer holds water. A new breakthrough in plant biotechnology, however, may restore some of the positive connotations of the old adage.

Researchers at the University of Toronto have produced the world's first bioengineered salt-tolerant plant. This breakthrough could soon allow agricultural crops to thrive in soils in which they would normally die, leading to higher productivity on farms in Canada's prairies and other parts of the world. With the Earth's population reaching six billion, every productive hectare of farmland counts.

Dr. Eduardo Blumwald, 1995 Steacie Fellow winner and University of Toronto plant biologist, led the research group that developed the plant, which grew in soils 10 times saltier than normal. The group included graduate students Gilad Aharon, Maris Apse and postdoctoral fellow Dr. Wayne Snedden.

Here's how they did it.

Dr. Blumwald and his group identified the gene that instructs plants to make a key protein, the Na+/H+ antiport. This antiport prevents sodium ions from interfering with important cell metabolisms and balances ions in the cell so that the plant draws in water by osmosis. While this antiport is present in all plants, it is more active in salt-tolerant plants, but very inactive in most commercial crops.

The team then identified the gene coding for an Na+/H+ antiport in Arabidopsis, a fast-growing plant with low salt resistance, and instructed the plant to "overexpress" the Na+/H+ antiport.

Control plants fed water with 100 millimolar of sodium died. The bioengineered plants flourished in water with 200 millimolar of sodium—that's 40 per cent of the concentration found in sea water. (Good soil normally has a concentration of 10 to 20 millimolar of sodium.)

Salinity is one of the most serious problems facing the agriculture industry worldwide. Forty per cent of global harvest comes from irrigated land, and, ironically, saline soils are often a by-product of irrigation. Approximately 10 million hectares of cropland are lost each year because of saline conditions. In addition, Agriculture and Agri-Food Canada points out that annual yields of most cereal and oilseed crops in the southern Prairies are half of what they could be because of saline soils.

Dr. Blumwald began studying how plants develop resistances to stress in 1985 as a postdoctoral student at McGill University, and has continued his research with NSERC support since 1987.

The University of Toronto has filed patent applications for this discovery around the world. With continued research, the hearty, salt-tolerant plants could move from the lab to the field within five years.

"By successfully genetically engineering a plant to have this salt management system," says Dr. Blumwald, "we've opened up the possibility of modifying economically important crops so that they may grow in saline conditions."

Task Force on Northern Research: Phase I Findings

In response to concerns expressed by the research community about the decline of research in Canada's North, NSERC and SSHRC established a joint Task Force on Northern Research in October 1998.

Chaired by NSERC Council member Dr. Tom Hutchinson of Trent University, the Task Force is composed of 17 members taken from the university, government and northern communities with expertise covering the broad range of natural sciences and engineering as well as social sciences.

The Task Force recently completed the first phase of its work. Its findings were presented to NSERC's Council in June and will be discussed by SSHRC's standing committee on Strategic Themes and Joint Initiatives in October. The Task Force found that Canadian northern research is indeed in crisis. Canada will not be able to meet its international science and research obligations, or contribute to issues of global importance. Neither will it be able to meet basic national obligations to monitor, manage and safeguard its northern environment, or respond to emerging social issues in the North.

Problems highlighted include a decline in university-based northern research, rising costs of doing research in the North, and a lack of funds, logistical support and renewal in the research communities. The Task Force also found, however, that there is a pressing need for researchers trained on northern issues and many opportunities exist for partnerships and alliances with northern communities.

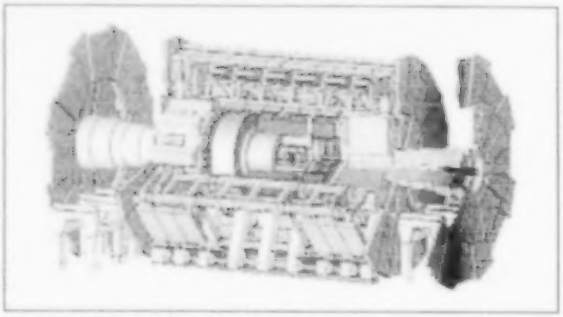
In its second phase, the Task Force will propose actions to address the issues and take advantage of the opportunities that it has identified. Its final report is due by mid-2000.

For further information, please contact Elizabeth Boston, Director, Life and Earth Sciences, Research Grants Division, at (613) 995-5695 or by e-mail at elizabeth.boston@nserc.ca.

ATLAS

Under the leadership of Dr. Robert Orr of the University of Toronto, Canadian subatomic physicists from the Universities of Alberta, British Columbia, Montreal and Victoria, as well as from Carleton University and TRIUMF, are participating in ATLAS, an experiment that represents a large fraction of NSERC's funding in that discipline.

All told, approximately 1700 collaborators, representing about 150 institutes around the world, are involved in the construction of the ATLAS detector at CERN (the European Laboratory for Particle Physics). The detector will study what happens when protons smash into each other at a sizeable fraction of the speed of light. Current theory predicts that the results of such collisions should lead to a greater understanding of why matter has mass. The proton smashing will take place in the Large Hadron Collider (LHC), currently being built inside the 27-kilometre Large Electron-Positron Collider (LEP) tunnel on the border between France and Switzerland. The LHC will be built using state-of-the-art superconducting magnet and accelerator technologies, and will begin operations in 2005.



ATLAS—A Toroidal LHC Apparatus

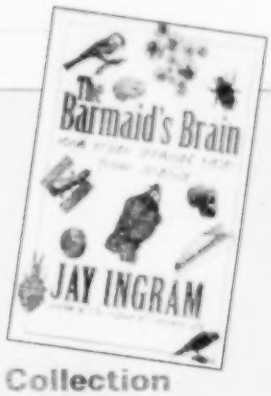
In addition to providing project research grant support to the Canadian ATLAS collaboration ($1.26 million in 1999-2000), NSERC is also assisting with the construction of the Liquid Argon Calorimeter and has made two Major Installation Grants to the collaboration. The first, for $12.2 million, was awarded in 1997 and will run until 2004; the second, for $1.9 million, was awarded in 1999 and will run until 2003.

Canada also contributes substantially to the construction of the LHC itself through the TRIUMF budget.

IOF Update

NSERC's International Opportunity Fund (IOF) has been in operation for just under a year now. Here are some examples of the types of support it has provided:

- Dr. Dean Karlen, Department of Physics, Carleton University—$12,500 to participate in international workshops leading to Canadian participation in a future electron-positron collider program.
- Dr. B.V. Kokta, Department of Chemical Engineering, Université du Québec à Trois Rivières—$19,300 to establish a collaboration with researchers in the Czech and Slovak Republics aimed at finding technologically feasible and economically acceptable uses for commingled plastic waste.
- Dr. Barry Ruddick, Department of Oceanography, Dalhousie University—$24,100 to help his group participate in the CARTUM project, an international project funded by the European Union to develop the next generation of turbulence models.
- Dr. Hugh MacIsaac, Department of Biological Sciences, University of Windsor, and his collaborators—a 2-year grant of $17,250 per year to assist in organizing a workshop that will bring together personnel from a number of labs in Canada, the U.S., Western Europe, the Ukraine and Russia to address issues of species invasion in the Great Lakes and Western Europe from the Ponto Caspian region.
- Dr. Anna Cellar, Department of Radiology, University of British Columbia—$20,000 to organize meetings between the medical Imaging research Group at UBC and the Computer Visualistics Group at the University of Magdeburg in Germany to investigate the possibility of using modern computer graphics techniques to present multi-dimensional dynamic data.



Diverse Collection of Science Stories a Winner

Jay Ingram's book "The Barmaid's Brain *and other strange tales from science*" won a 1998 Science in Society Journalism Award—General Books category. NSERC is one of twelve sponsors of these annual Canadian Science Writers' Association awards honouring outstanding contributions to journalism in the Canadian media. Tim Nau, NSERC's director of communications, presented the award to Mr. Ingram in May, at a banquet in Ottawa.

"Bacon and Eggheads" Lecture Series a Hit With MPs

The monthly "Bacon and Eggheads" lecture series co-sponsored by NSERC and the Partnership Group for Science and Engineering (PAGSE) is proving to be quite a hit with MPs. The series, launched a year ago as part of NSERC's twentieth anniversary celebrations, was designed to bring research advances to the attention of federal politicians.

In March, professor Jeremy McNeil of Laval University brought along some of his favourite insects when he had breakfast in the House of Commons. (We hasten to add that they were part of his presentation to MPs and not part of the meal!) The NSERC grantee discussed the need to rethink the traditional "spray first" way of reducing pest populations to tolerable levels. (More than 50 million kilograms of herbicides, insecticides and fungicides are used in Canada each year.) He described the interdisciplinary research effort involved in developing new control strategies and the underlying importance of basic science to our understanding of insect behaviour and reproduction.

If any MPs sneaked out of the House of Commons to buy a bottle of Vitamin E (the natural variety) after listening to NRC scientist Keith Ingold's April talk, they probably couldn't be faulted. No snake oil salesman, Dr. Ingold is the distinguished winner of the 1998 Canada Gold Medal for Science and Engineering. He identified Vitamin E as one of the most powerful free radical fighters in the human body. It's a discovery that has lent scientific credibility to a range of healthful effects now attributed to the vitamin. Dr. Ingold gave an overview of the latest directions in vitamin research and his career at the forefront of free radical chemistry.

In May, Dr. Paul Jay, Director of Global External Research at Nortel Networks, told MPs along with members of the Canadian Science Writers' Association, in town for their annual meeting, that the exponential growth in silicon technologies and chip densities that has sustained the semiconductor industry for several decades may be about to tail off. Gordon Moore observed over 30 years ago that silicon chip complexity was doubling every 18 months, a dependency now called "Moore's law." This "law" has held constant since 1970 to the point where it has become not only an observation of the past, but also a predictor of the future and an article of faith for many. But how long can this trend continue before market economies and the laws of physics conspire to disrupt it, Dr. Jay asked. He looked at the factors that may upset this regular progression, including the possibility that new "rogue" technologies may emerge and lead us into the realm of biocomputers.

The fall NSERC/PAGSE series begins in October. As always, we welcome suggestions for speakers.

NCE News

The 1999-2000 competition for new Networks of Centres of Excellence is rapidly progressing. In early June, 12 groups were invited to submit full proposals by October 4. Visit the NCE Web site for details on the groups: http://www.nce.gc.ca/news/groups99.htm.

It is expected that the results of the 1999-2000 competition will be announced in February 2000. Researchers and their private and public partners should keep an eye on the NCE Web site as details of the 2000-01 competition are expected to be available in the near future. An NCE competition is also being planned for 2001-02.

Inaugural Foundation Lecture

NSERC has joined forces with the Royal Canadian Institute to establish the Foundation Lecture, to be delivered each year by the winner of the NSERC Canada Gold Medal.

The first Lecture, entitled "Number Theory: Mystery and Beauty," will be given by 1999 Gold Medal recipient James Arthur, of the Department of Mathematics, University of Toronto.

The RCI has been promoting science in Toronto since 1851.

Mark your calendar now so you don't miss the lecture: Tuesday, November 9, at 7:30 p.m., in the Theatre, Royal Ontario Museum, Queen's Park, Toronto. Admission is free. For information, call (416) 928-2096.

Royal Visit

Dr. Tom Brzustowski presenting a book of photographs to King Carl XVI Gustaf of Sweden. His Majesty, who was in Ottawa in September leading a Swedish trade delegation, is personally very interested in science and engineering, as well as in promoting trade between his country and ours.